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CEREBROSPINAL MENINGITIS IN TEXAS.

A report by Passed Asst. Surg. R. H. von Ezdorf.

Referring to bureau telegram dated January 16, 1912, directing me to proceed immediately to Dallas, Tex., by way of Austin, and to confer with the State health authorities relative to the prevalence of cerebrospinal meningitis, I have the honor to make the following report:

DALLAS.

The cases reported in Dallas up to January 22, 1912, were as follows:

	Cases.	Deaths.
October, 1911.....	1	1
November, 1911.....	9	6
December, 1911.....	73	45
Jan. 1 to 22, 1912.....	156	55
Total.....	239	107

According to color and sex, these cases were distributed as follows:

	Cases.	Deaths.
White male.....	107	58
White female.....	65	22
Colored male.....	37	13
Colored female.....	30	14

Classed according to ages, they were:

Less than 1 year.....	12
1 to 4 years.....	30
5 to 9 years.....	41
10 to 14 years.....	14
15 to 19 years.....	27
20 to 29 years.....	40
30 to 39 years.....	23
40 to 49 years.....	26
50 years and over.....	15
No age given.....	11

Total cases..... 239

The cases were widely scattered and occurred in all parts of the city. In 10 or 12 families more than 1 case had occurred.

A visit was made to the city hospital of Dallas, which since January 7, 1912, had been used exclusively for the treatment of cerebro-

spinal meningitis cases, under the direction of Dr. Abraham Sophian of the Research Laboratory of New York City, and Dr. A. W. Nash, the health officer of Dallas.

The use of the specific serum by injection directly into the sub-arachnoidal space, after first removing part of the cerebrospinal fluid, was the treatment used. The hospital was opened January 7 and up to January 22 there had been 106 admissions, which included some cases admitted from the county. There had been 31 deaths among these cases, and 75 cases were still in the hospital. Of these a number were convalescent. The mortality following the serum treatment was reported to be about 10 per cent, while the general mortality in the hospital was higher. This was explained as due to the admission of a number of cases in a moribund state.

The spinal fluid which was obtained from all the cases was sent to Dr. A. E. Thayer, professor of pathology and bacteriology, Baylor University, School of Medicine and Pharmacy, for examination, and in all the meningococcus was found.

Since January 13, 1912, examinations for carriers have been made of persons who were known to have come in contact with cases of the disease—that is, of families among whom cases developed.

The method of making these examinations was as follows: Smears were obtained by use of swabs taken from the nose and throat, and the swabs used for the inoculation of culture tubes of sheep's serum broth. This work was done by a corps of 5 fourth-year medical students who had been instructed regarding the technique of obtaining the specimens. Each student was furnished with a bag containing the following:

- 1 dozen slides.
- 1 dozen sterile swabs in tubes.
- 1 flask sheep's serum glucose broth.
- 1 flask alcohol.
- 1 alcohol lamp.
- 1 dozen Petri dishes with adhesive strap.
- 1 notebook.

The microscopic examinations were made by Dr. A. E. Thayer. Smears found to show numerous diplococci having the morphological appearance of the meningococcus and differentiated from the micrococcus catarrhalis by staining with Loeffler's methylene blue, were rated as positive. These findings were checked with the cultures obtained on the following day.

The results of smear examinations for the period January 13, 1912, to 5 p. m. January 26, 1912, were as follows:

On first examination.

Nose and throat both positive.....	152
Nose or throat one positive.....	99
Nose and throat both negative.....	170
Total.....	421

This shows an examination of 421 persons, among whom 59.6 per cent were reported to be positive healthy carriers on the first examination.

The results obtained from cultures showed 53.75 per cent of the first examinations to be positive instead of 59.6 per cent as recorded by smear examinations.

The total number of smear examinations made was 635, which includes reexaminations a second, third, and fourth time. The results obtained give 205 positive for nose and throat, 145 positive for nose or throat, and 285 negative; that is, 55 per cent positive findings.

In consideration of the fact that an epidemic prevailed and that diplococci as well as the *micrococcus catarrhalis* were to be found so prevalent among contacts, in the smears alone, it was accepted as a public health policy to consider those persons, from whom these findings were reported, to be carriers until proven otherwise on culture examinations.

House quarantine was practiced and all contacts were required to remain in their homes, the houses being placarded. Release from quarantine was made dependent upon a negative microscopic finding of swab examinations from the nose and throat of all inmates, and so long as there was a positive finding the observation continued. The house quarantine was carried out on the honor system, except in a few instances, where guards were placed during the day-time only.

A sanitary campaign of cleaning up was also started. A board of diagnosis, consisting of 4 physicians, was appointed.

FORT WORTH, TEX.

There had been reported the following number of cases:

	Cases.	Deaths.
December, 1911.....	4	2
Jan. 1 to 24, 1912.....	57	23
Total.....	61	27

These cases occurred mainly in the insanitary sections of the city. As many as could be induced to enter the college hospital were treated there.

It was learned that the public schools had not been closed during the month, and that with 11,000 pupils attending only 3 had developed the disease, and that only 1 of the 3 was a regular attendant.

In one family only had 2 cases occurred, and these developed 12 days apart. Serum for the treatment for all cases was furnished by the mayor's office to the physicians reporting cases.

Microscopic examinations of the spinal fluids obtained from patients, for the confirmation of the diagnosis, were being made.

A circular letter had been printed for distribution to the public and to all school children. This circular reads as follows:

INFORMATION REGARDING PREVENTION OF MENINGITIS.

(Furnished by the city advisory committee of five physicians and City Physician W. M. Trimble.)

1. Use by everyone of any good antiseptic, sprayed thoroughly into nose and throat from an atomizer, not less than three times daily.
2. Thorough cleaning of the house and premises and careful attention to personal cleanliness.
3. Remain at home as much as possible, avoid mingling with crowds and promiscuous visiting among friends and relatives.

4. Dress to meet changes in the weather and pay strict attention to maintaining the highest standard of health.

This germ is one of the most easily killed of any known and with the cooperation of the public can be quickly stamped out.

WACO, TEX.

The report of cases at Waco was as follows:

	Cases.	Deaths.
December, 1911.....	51	20
Jan. 1 to 25, 1912.....	68	24
Total.....	119	44

Tabulated according to color and sex, these cases occurred as follows:

	Cases.	Deaths.
White male.....	47	19
White female.....	37	11
Colored male.....	21	9
Colored female.....	14	5

There were 4 families in which 2 cases of the disease occurred in each. So far as practicable, cases were removed to the Provident Sanitarium.

The city authorities were having a building, which had formerly been used as a hospital, renovated for the occupancy and treatment of cerebrospinal meningitis cases only.

An inspection of places where cases of the disease were reported was also made. Upon the removal of a case to the hospital the house was disinfected with formaldehyde and the family released from further observation.

At a special meeting of the board of health there were adopted measures relating to the detection and quarantine of carriers found among direct contacts, and requiring that no convalescent be discharged until proved not to be a carrier of the organisms in nose or throat secretions.

HOUSTON, TEX.

Upon the request of the governor and State health officer, an inspection was made of the convict farm, about 20 miles from Houston, where a case of the disease had occurred in the family of the physician of the camp. The infection in this case was traced outside of the camp.

At Houston there had been reported between January 1 and '29, 1912, inclusive, 26 cases of cerebrospinal meningitis, with 9 deaths.

Detailed according to color and sex, these occurred as follows:

	Cases.	Deaths.
White males.....	9	2
White females.....	3	1
Colored males.....	11	6
Colored females.....	3	.....
Total.....	26	9

Isolation of patients in the isolation hospital was done as far as practicable. House quarantine by placarding was practiced. No contact or convalescent had been released from quarantine, and such release I was informed would only be made on the negative bacteriological examination of the nose and throat secretions of such persons.

GENERAL.

The reports received to January 27, 1912, by the State health officer showed that there had been 550 cases with 210 deaths reported in 49 different localities in Texas. The chief places where the disease prevailed were Dallas, Fort Worth, Waco, and Houston.

It is remarkable that San Antonio, one of the large cities in Texas, has had no cases reported up to this time, January 25.

At Rockwall, 10 cases with 5 deaths were reported, among which 5 cases and 2 deaths occurred in one family.

The State health officer issued the following circular dated January 8, 1912, to all health officers in the State:

DEAR DOCTOR: Isolate and place in absolute quarantine all cases cerebrospinal meningitis.

On appearance of the disease in your city close public schools and discourage public gatherings.

Insist upon general sanitary measures, clean and disinfect sidewalks, streets, and alleys.

Carriers convey the disease by means of the nose and throat secretions.

Insist upon the enforcement of the antispitting ordinance and advise the use of an antiseptic spray in the nose and throat, as a precautionary measure.

See that all street cars and public conveyances are disinfected.

Yours truly,

RALPH STEINER, *State Health Officer.*

Another circular letter was issued January 23, 1912, as follows:

DEAR DOCTOR: It is doubtful whether a definite quarantine period is sufficient to control the spread of meningitis, as it is known that carriers may carry the meningococcus in their nasal and throat secretions for a period of several weeks. To prevent the spread of the disease in this manner a bacteriological examination of these secretions from all convalescent meningitis patients or persons directly exposed to the disease must be made 10 days after the subsidence of the disease. We have made arrangements for such examinations and request you to assist us. Whether you will continue quarantine will depend in each case upon our findings.

The following is a description of the technique of preparing specimens for examination and instructions which you are to follow:

1. By means of cotton-tipped probes the secretions from the upper portion of each nasal cavity and from the region of the fauces are collected.

2. The secretions are smeared upon a clean glass-cover slip or slide, such as is used in ordinary microscopical work.

3. Two smears are made from each nasal cavity and two from the throat, making a total of six smears to be made.

4. Label each smear, indicating whether taken from nose or throat.

5. Give name, address, age, sex, color, and occupation of each person from whom the smears were taken, and also state whether a convalescent or merely one exposed to meningitis.

6. Send specimens and information requested to State bacteriologist, Austin, Tex.

Yours truly,

STATE HEALTH OFFICER.
STATE BACTERIOLOGIST.

SUMMARY.

The history of the present epidemic for 1911-12 begins with the cases reported in Dallas with 1 case in October and 9 cases in November, increasing in December and January, and averaging in January about 7 new cases a day.

In Waco the first 9 cases were reported on December 20, after which cases were reported for the remainder of the month on the average of about 5 new cases a day; for January the report of new cases averaged 3 each day.

In Fort Worth the 4 cases reported for December occurred between December 20 and 31, 1911, and the average report of new cases in January, 1912, was about 3 a day.

In Houston the first case was reported January 1, and the average number of new cases was about 1 a day.

A few cases were reported during the latter part of January in Galveston. In other points in Texas cases of the disease were reported in January, San Antonio being the only large city apparently free from the disease.

It was reported that the weather conditions for the northern part of the State had been unusual. During the past three years a drought had occurred so that drinking water had to be shipped into Dallas.

The present winter season was unusual, in that for six weeks, between December and January, continuous rains had occurred, and severe cold weather also prevailed.

It was also reported that an epizootic of "blind staggers" had prevailed among horses about the time this epidemic started.

The occurrence of more than one case in a family has been comparatively rare.

The disease prevailed chiefly among the poorer classes living under insanitary conditions, but others were also affected.

The disease affected males more than females, and the mortality was slightly less among the females.

The extremes in ages were 8 weeks and 80 years.

From the statistics of 302 cases in which the ages were given, 55 occurred in children less than 5 years; 54 between 5 and 10 years; 24 between 10 and 15 years; 44 between 15 and 20 years; 54 between 20 and 30 years; 25 between 30 and 40 years; 27 between 40 and 50 years; and 19 for persons over 50 years of age.

This gives a total of 177 cases, or 58.6 per cent, occurring in persons less than 20 years of age; and 125, or 41.4 per cent, of the cases in those over 20 years of age.

The people in the infected cities seemed to be in perfect accord with the city health authorities in their endeavors to control the spread of infection.

The following measures were found practical of enforcement:

1. Placarding and quarantining of a house.
2. Establishment of an isolation hospital for the care, and treatment with specific serum, of cerebrospinal meningitis cases only.
3. For detecting carriers: Bacteriological examinations of nose and throat secretions of all persons quarantined in houses where cases occurred.
4. Medical inspection service and board of diagnosis.
5. Distribution of circulars advising—
 - (a) Use of an antiseptic spray for nose and throat.
 - (b) Careful attention to personal hygiene, mainly cleanliness; avoid chilling of body, and maintain good health.
 - (c) Avoidance of public gatherings and close contact with persons.
 - (d) Cleaning of premises, and free ventilation of houses.
 - (e) That the disease is infectious, and that healthy persons may innocently transmit it to others by disseminating germs, which may be in their nose and throat, by coughing, sneezing, kissing, etc.
 - (f) That the disease is not carried by clothing, merchandise, food, etc.

It was impossible to trace the source of infection from one case to another; nor was it practicable to determine what factor was necessary in causing the development of the disease in one person and not in another known to be intimately in contact with the disease.

There were a number of towns throughout Texas which quarantined places where the disease had made its appearance. As this was impracticable and gave a false sense of security, owing to the widespread infection and large number of healthy carriers, it was advised that quarantine was ineffective and simply interfered with commerce.

Cases and deaths reported to Jan. 24, 1912.

Towns.	Cases.	Deaths.	Towns.	Cases.	Deaths.
Austin.....	5	2	Industry.....	1	.....
Beeville.....	1	.....	Karnes County.....	5	.....
Bonham.....	1	.....	Ladonia.....	Present. 2	.....
Breckenridge.....	1	1	Lockhart.....	1	1
Brownwood.....	4	1	Kirbyville.....	1	.....
Brenham.....	2	1	Marlin.....	1	.....
Columbus.....	1	.....	Mart.....	1	.....
Cooper.....	1	.....	Mexia.....	2	.....
Crockett.....	1	.....	Midland.....	3	2
Cuero.....	1	.....	Mineola.....	2	.....
Canyon.....	1	1	Palestine.....	1	.....
Clarksville.....	12	Several.	Plano.....	1	.....
Dallas.....	249	110	Rockwall.....	10	5
Dallas County.....	6	.....	Saltillo.....	Epidemic. ....	.....
Decatur.....	1	.....	Sandia.....	1	.....
Dublin.....	1	.....	Sherman.....	3	.....
Emory.....	11	9	Smithville.....	3	1
Fairfield.....	4	1	Shiner.....	1	.....
Forney.....	1	.....	Somerville.....	3	.....
Fort Worth.....	61	27	St. Hedwig.....	1	.....
Georgetown (county of Wil-	.....	.....	Teague.....	1	1
lamson).....	4	1	Thurber.....	2	.....
Gatesville.....	2	1	Tyler.....	4	2
Henrietta.....	1	.....	Waco.....	118	43
Hereford.....	3	.....		
Houston.....	8	.....	Total.....	550	210